The Infrared Science and Technology Integration Group (IRSTIG)

Leadership Council Co-Chairs:
Meredith MacGregor – meredith.macgregor@colorado.edu
Jake Connors – jake.connors@nist.gov

COPAG AAS Splinter Session
January 9, 2023

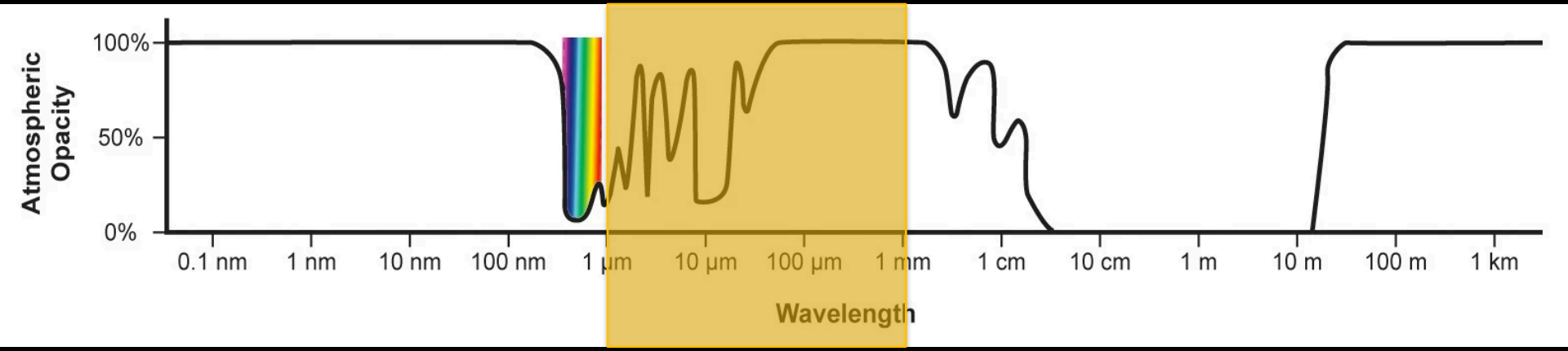
What is the IRSTIG?

This Infrared Science Interest Group (IR SIG) was originally constituted in 2002 and works with the Cosmic Origins Program Analysis Group (COPAG) Executive Committee and NASA headquarters to collect community input on the long-term objectives of infrared astronomy and enhance the voice of IR astronomy within the broader astronomical community.

The group was recently reconstituted as the Infrared Science and Technology Integration Group (IR STIG) following the Astro2020 Decadal in order to better interface between both the scientific drivers and technological requirements as our community leverages existing facilities and works to develop new platforms.

Website: https://cor.gsfc.nasa.gov/sigs/irstig.php

What wavelengths and facilities do we cover?



Cover the entirety of the infrared and submillimeter from roughly 1 μm to 1 mm

Advocate for facilities that operate at these wavelengths including…

JWST, Roman, ALMA, SPHEREx, SOFIA, and potential future far-infrared probes and great observatory

What do we do?

Monthly Webinars

Combines science and technology talks on Zoom and occurs on the first Monday of every month

Biannual Newsletter

Presents recent science, technology, and mission development highlights along with a list of upcoming events

Workshops

Hosted 'Astro2020 and IR Astrophysics: Planning for the Next Decade' workshop in Boulder, CO March 30 – April 1, 2022 with more than 100 participants

Community Advocacy

NASA Precursor Science Workshop

SOFIA petition to NASA Headquarters

Review articles and white papers

Splinter sessions at AAS meetings

Recent Highlights - Workshop

Sponsored by:

University of Colorado Boulder

USRA

Ball

Recent Highlights - Workshop

Talks covered FIR probe concepts, SOFIA, science, and technology development

All talk slides available here:

https://bit.ly/irstig_workshop_slides

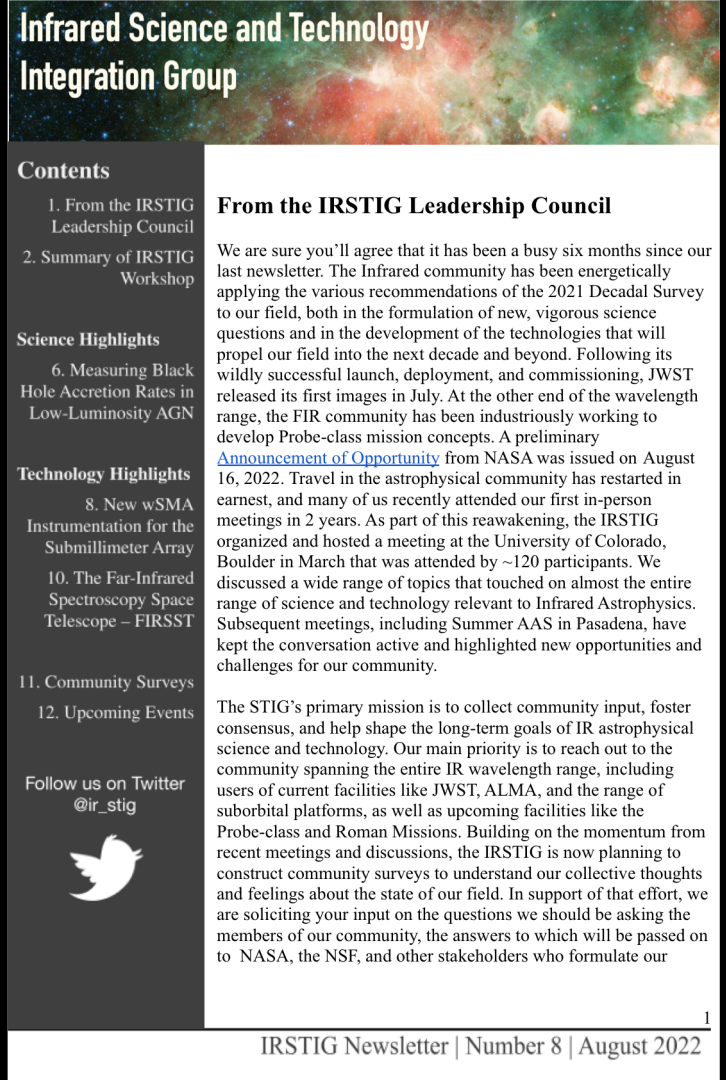
Infrared Astrophysics Workshop 2022 Program

	Wed March 30	Thurs March 31	Fri April 1
8:00 AM 8:20 AM 8:40 AM	**Breakfast & Discussion** (8:00-9:00 AM) *Breakfast Provided!*	**Breakfast & Discussion** (8:00-9:00 AM) *Breakfast Provided!*	**Breakfast & Discussion** (8:00-9:00 AM) *Breakfast Provided!*
9:00 AM	**Welcome** (9:00-9:10 AM)	**Chris Walker** - *Single Aperture Large Telescope for Universe Studies (SALTUS)* (9:00-9:30 AM)	**Margaret Meixner** - *SOFIA Opportunities for Astro2020 Priorities* (9:00-9:20 AM)
9:20 AM	**Dominic Benford** - *Planning for Astrophysics in the 2020s and beyond* (9:10-9:40 AM)		**Tirupati Kumara Sridharan** - *Sub-mm VLBI with SOFIA and Suborbital Platforms: Testing GR through M87 SMBH Photon Ring Detection* (9:20-9:40 AM)
9:40 AM	**Jeanette Domber** - *Ball Aerospace Overview, From Jars to IR* (9:40-10:00 AM)	**Jason Glenn** - *Science and Mission Concept for the PRIMA Far-Infrared Probe* (9:30-10:00 AM)	**Bernhard Schulz** - *A German/European SOFIA Instrumentation Effort* (9:40-10:00 AM)
10:00 AM	**Coffee Break** (10:00-10:20 AM)	**Coffee Break** (10:00-10:20 AM)	**Coffee Break** (10:00-10:20 AM)
10:20 AM	**Jed McKinney** - *Heating and Cooling in the Interstellar Medium of Dusty Galaxies* (10:20-10:40 AM)	**Asantha Cooray** - *FIRSST: Overview of the Far-Infrared Spectroscopy Space Telescope Probe Concept* (10:20-10:50 AM)	**Small Group Workshop** (10:20-11:00 AM)
10:40 AM	**Johannes Staguhn** - *Detector developments for Mid- and Far-Infrared Instruments for Future Missions* (10:40-11:00 AM)		
11:00 AM	**Laura Sommovigo** - *Newborn but dusty: the puzzle of EoR galaxies* (11:00-11:20 AM)	**Dave Leisawitz** - *The Space Infrared Interferometric Telescope (SPIRIT): A Far-IR Probe Candidate* (10:50-11:20 AM)	**Jordan Wheeler** - *Broadband Kinetic Inductance Detectors for Far-IR Observations* (11:00-11:20 AM)
11:20 AM	**Mike DiPirro** - *A Far-IR Technology Roadmap Derived from the Origins Flagship Study* (11:20-11:40 AM)	**Probe Discussion** (11:20AM-12:00PM)	**Roberta Paladini** - *On the Origin of the Initial Mass Function and the Importance of Near and Far-IR measurements* (11:20-11:40 AM)
11:40 AM	**Poster Flash Talks** (11:40 AM -12:00 PM)		**Reinier Janssen** - *Large arrays of high-sensitivity Kinetic Inductance Detectors for the Terahertz Intensity Mapper* (11:40 AM-12:00 PM)
12:00 PM 12:20 PM 12:40 PM	**Lunch** (12:00-1:30 PM)	**Lunch** (12:00-1:30 PM)	**Lunch** (12:00-1:30 PM)
1:00 PM 1:20 PM			
1:40 PM	**Emily Barrentine** - *Integrated On-Chip Spectrometers for Future Longwave Far-Infrared Space Missions* (1:30-1:50 PM)	**Matt Bradford** - *Instrumentation and Technology for PRIMA: a Far-Infrared Astrophysics Probe* (1:30-1:50 PM)	**Sae Woo Nam** - *Superconducting Nanowire Single Photon Detectors for Mid-Infrared Spectroscopy* (1:30-1:50 PM)
2:00 PM	**Tom Megeath** - *Far-IR studies of Mass Accretion and Feedback Toward Low Mass Protostars* (1:50-2:10 PM)	**Meredith MacGregor** - *A New Window on Planet Formation with Far-Infrared Spectroscopy* (1:50-2:10 PM)	**Gordon Stacey** - *Silicon substrate-based Resonant Spectrometers* (1:50-2:10 PM)
2:20 PM	**Philip Mauskopf** - *Space qualified FPGA based readout electronics for superconducting detector arrays* (2:10-2:30 PM)	**Small Group Workshop** (2:10-3:10 PM)	**Imran Mehdi & Martina C. Wiedner** - *Heterodyne Technology for Future Space Missions* (2:10-2:30 PM)
2:40 PM	**Small Group Workshop** (2:30-3:10 PM)		**Large Group Workshop** (2:30-3:30 PM)
3:00 PM			
3:20 PM	**Cookie Break** (3:10-3:40 PM)	**Cookie Break** (3:10-3:40 PM)	
3:40 PM	**Jens Kauffmann** - *Paradigm-Shifts in Mission Design enabled by the SpaceX Starship* (3:40-4:00 PM)	**Kevin Stevenson** - *Eyes on the PIE: Using Planetary Infrared Excess to Study the Nearest Potentially-Habitable Exoplanets* (3:40-4:00 PM)	**Workshop Wrap-up** (3:30-4:00 PM)
4:00 PM	**Ella Sciamma-O'Brien** - *On the Importance of Producing and Characterizing Laboratory Analogs of Cosmic Grains, Planetary Atmospheric Aerosols, and Surface Material* (4:00-4:20 PM)	**Avi Mandell** - *MIRECLE: Mid-IR Concept to Study Non-Transiting Rocky Planets Orbiting the Nearest M-Stars* (4:00-4:20 PM)	
4:20 PM	**Large Group Workshop** (4:20-5:30 PM)	**Large Group Workshop** (4:20-5:00 PM)	
4:40 PM			
5:00 PM		**Social Event @ Spirit Hound** Leave Williams Village @ 5:00 PM Return to Williams Village @ 9:30 PM	
5:20 PM			

Recent Highlights – Newsletter

Most recent edition published in August 2022

Look out for a new edition in Spring 2023!



Infrared Science and Technology Integration Group

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From the IRSTIG Leadership Council

We are sure you'll agree that it has been a busy six months since our last newsletter. The Infrared community has been energetically applying the various recommendations of the 2021 Decadal Survey to our field, both in the formulation of new, vigorous science questions and in the development of the technologies that will propel our field into the next decade and beyond. Following its wildly successful launch, deployment, and commissioning, JWST released its first images in July. At the other end of the wavelength range, the FIR community has been industriously working to develop Probe-class mission concepts. A preliminary Announcement of Opportunity from NASA was issued on August 16, 2022. Travel in the astrophysical community has restarted in earnest, and many of us recently attended our first in-person meetings in 2 years. As part of this reawakening, the IRSTIG organized and hosted a meeting at the University of Colorado, Boulder in March that was attended by ~120 participants. We discussed a wide range of topics that touched on almost the entire range of science and technology relevant to Infrared Astrophysics. Subsequent meetings, including Summer AAS in Pasadena, have kept the conversation active and highlighted new opportunities and challenges for our community.

The STIG's primary mission is to collect community input, foster consensus, and help shape the long-term goals of IR astrophysical science and technology. Our main priority is to reach out to the community spanning the entire IR wavelength range, including users of current facilities like JWST, ALMA, and the range of suborbital platforms, as well as upcoming facilities like the Probe-class and Roman Missions. Building on the momentum from recent meetings and discussions, the IRSTIG is now planning to construct community surveys to understand our collective thoughts and feelings about the state of our field. In support of that effort, we are soliciting your input on the questions we should be asking the members of our community, the answers to which will be passed on to NASA, the NSF, and other stakeholders who formulate our

Recent Highlights – Webinars

Hosted three webinars this fall with two talks each

Putting together the spring speaker line-up now

Reach out if you want to nominate a speaker!

Recent Seminars

December 5, 2022
The Starburst-AGN-Shock Connection in Galaxy Mergers
Dr. Vivian U (UC Irvine)
Re-defining G in ultra-low temperature bolometers with phonon engineering
Dr. Jake Connors (NIST-Boulder)

Additional Information

November 7, 2022
Phosphine in the Atmosphere of Venus - A Sensitive Upper Limit using SOFIA GREAT
Dr. Martin Cordiner (NASA GSFC, Catholic University of America)
AGN Feedback on the Star-Forming ISM in NGC 7469 with JWST
Dr. Thomas Lai (Caltech/IPAC)

Additional Information

October 3, 2022
Far-Infrared Kinetic Inductance Detectors at NIST-Boulder
Dr. Jason Austermann (NIST)
Efficient Star Formation in Dusty Galaxies
Dr. Jed McKinney (UT Austin)

Additional Information

Who is on the Leadership Council?

Name	Affiliation	Email
Stacey Alberts	University of Arizona	salberts@Arizona.edu
Jake Connors	NIST-Boulder	jake.connors@nist.gov
William Danchi	NASA GSFC	william.c.danchi@nasa.gov
Candice Fazar	Rochester Institute of Technology	cmfsps@rit.edu
Meredith MacGregor	University of Colorado Boulder	meredith.macgregor@colorado.edu
Jed McKinney	University of Texas Austin	jed.mckinney@austin.utexas.edu
Robert Paladini	IPAC	paladini@ipac.caltech.edu
Nathan Roth	NASA GSFC	nathaniel.x.roth@nasa.gov
Johannes Staguhn	JHU, NASA GSFC	jstaguhn@jhu.edu
Kevin Stevenson	JHU APL	kevin.stevenson@jhuapl.edu
Allison Strom	Northwestern University	allison.strom@northwestern.edu
Volker Tolls	Harvard CfA	vtolls@cfa.harvard.edu

How do you get involved?

Join our mailing list

Instructions are available here:
https://cor.gsfc.nasa.gov/sigs/irsig/maillist/irsig_maillist.php

Follow us on Twitter

Follow @ir_stig

Apply to join the Leadership Council

Look out for a call for new members in Summer 2023

Attend our webinars

Hosted the first Monday of every month at 3pm Eastern on Zoom
https://cuboulder.zoom.us/j/253754929 (password: irsig)

Join our Splinter Session Tuesday, 1/10 from 9-11am in Room 204!

Time	Speaker	Talk Topic
09:00am – 09:05am	Jake Connors + Meredith MacGregor	Introduction to the IRSTIG
09:05am – 09:15am	Dominic Benford	Roman Space Telescope
09:15am – 09:25am	Lee Mundy	SPICE Probe Concept
09:25am – 09:35am	Rachel Akeson	Synergies with SPHEREx
09:35am – 09:45am	Jason Glenn	PRIMA Probe Concept
09:45am - 09:55am	Joaquin Viera	FIR Surveys for Galaxy Evolution
09:55am – 10:05am	Asantha Cooray	FIRSST Probe Concept
10:05am – 10:15am	Enrique Lopez Rodriguez	Polarimetry with SOFIA and ALMA
10:15am – 10:25am	Chris Walker	SALTUS Probe Concept
10:25am – 10:35am	Douglas Scott	NIR and FIR Star Formation Tracers
10:35am – 11:00am	Community Discussion and Questions	